There are many points of interest in physical diagnosis which these cases illustrate, but I am only concerned now with the clinical problem of the frequency with which organic heart disease follows chorea.

Not many of the cases had subjective symptoms of cardiac disease. In 14 instances there was complaint of shortness of breath; 16 cases had attacks of palpitation, and in 6 cases there was cardiac pain. Two cases had died of heart disease, 1 was in bed with cardiac dropsy, and in several others there were premonitions of heart failure. The majority illustrated the important clinical law in valvular disease, that the symptoms do not result from the lesion, but from failure in the compensatory action which for years may equalize the circulation and obviate completely the most serious mechanical defect.

A study of these cases justifies, I think, the following conclusions:

1. That in a considerable proportion of cases of chorea—much larger than has hitherto been supposed—the complicating endocarditis lays the foundation of organic heart disease.

2. In a majority of the cases the cardiac affection is independent of rheumatism, and cannot be regarded as in any way associated with it; unless, indeed, we hold with Bouillaud, that in the disease "chez les jeunes sujets le cœur se comporte comme une articulation."

3. As the presence of an apex systolic murmur in chorea is usually an indication of the existence of mitral valvulitis, as much care should be exercised in this condition as in the acute endocarditis of rheumatism. Rest, avoidance of excitement, and care in convalescence, may do much to limit a valvulitis, and obviate, possibly, the liability to those chronic nutritional changes in the valves wherein lies, after all, the main danger.

HEREDITARY TREMOR,

A HITHERTO UNDESCRIBED FORM OF MOTOR NEUROSIS.[1]

By C. L. Dana, A.M., M.D.,

PRESIDENT OF THE NEW YORK NEUROLOGICAL SOCIETY, VISITING PHYSICIAN TO BELLEVUE HOSPITAL,
PROFESSOR OF NERVOUS AND MENTAL DISEASES, NEW YORK POST-GRADUATE
MEDICAL SCHOOL.

The object of this paper is to call attention to a peculiar hereditary motor disorder which has heretofore never to my knowledge been systematically described by medical writers.

Definition.—The affection in question consists of a fine tremor, constantly present in typical cases during waking hours, voluntarily controlled for a brief time, affecting nearly all the voluntary muscles, chronic, beginning in very early life, not progressive, not shortening life, not accompanied with paralysis or any other disturbances of nervous function. It resembles to some extent the tremor of paralysis agitans, still more a simple neurasthenic tremor. A most striking clinical feature is its marked hereditary or family type, and its transmission along with other nervous diseases.

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[1] I am under great obligations to Dr. Henry Boynton and Dr. Fred. T. Kidder, of Woodstock, Vt., and to Dr. Coulard, of Brattleboro, Vt., for assistance in securing data for my histories.

HISTORICAL.—Sauvages (*Nosolog. meth.*, 1766, quoted by Reynolds's *System of Med.*, iii. p. 196) refers to the case of a pregnant woman who suffered from a fright and gave birth to a child affected with a "feeble" tremor. Most (*Encyclopædia de méd. Praxis*, Paris, 1836, ii. 555) refers in a few words to several cases of tremor which all occurred in one family. Sanders (Reynolds's *System*, i. p. 724) reports a case of paralysis agitans non-senilis beginning at the twelfth and lasting till the sixty-sixth year. Trousseau says that senile tremor is not confined to the aged, but may affect persons of middle age or even adolescents. Weschede (Virch. *Archiv*, Bd. l. Heft 2) reports a case of supposed paralysis agitans occurring in a boy caused by the kick of a horse. Post-mortem showed, however, that this was a case of disseminated sclerosis. And the statements of Duchenne (Ziemssen's *Cyclop.*, xiv. p. 396) and other early observers that paralysis agitans occurs sometimes in early life are based possibly on observations of cases like Meschede's. Hennis Green, Gowry, and Sanders speak of temporary tremors occurring in childhood. Wharton Sinkler, in Pepper's *System of Medicine*, vol. v., art. "Tremor," speaks of a patient who had suffered from tremor all her life. Since finishing this article my attention has been called to a case of "congenital tremor," reported by Dr. Predazzi, of Geneva (*Gazetta degli Ospitali*, June 26, 1887). The patient had suffered from birth from an oscillatory tremor of the head and eyeballs.

The above forms all that I can find bearing on the affection I am about to describe and it is evident that no one has more than incidentally, if at all, observed and reported such cases as my own. Most, Axenfeld, and Sinkler have evidently seen examples of the neurosis I am describing.

CLINICAL CASES.—I have seen and studied the tremor in three families, and in all it preserves a general clinical resemblance. In one family I have obtained by far the most complete and striking records, and I can best serve my purpose by first giving an account of the disease as it occurred in one of its members.

FAMILY A. CASE I.—N. R., aged seventy-seven, w. U. S. The family history will be referred to later. The patient is a man of medium weight, spare build, and of nervous, excitable temperament. He is a much more than ordinarily intelligent man, taking an active interest in religious political, and local affairs. In early life he took a degree in medicine, but never practised. His habits have been good. He has never used alcohol or tobacco. He has had no fits or other nervous disease, but has had pneumonia five times. He has had the tremor from early childhood, it has continued about the same for over seventy years. It affects his arms most, but also his lower limbs. Any noise or excitement increases it, and enlarges its range. He has no nystagmus, and his eye-sight is good. The tremor affects the two sides about equally. It is fine in character, like a neurasthenic tremor, and there is not that wide range in the movement characteristic of old cases of paralysis agitans. It is accompanied with a slight contracture of the fingers, but otherwise there is no motor disturbance, such as rigidity, cramp, or paresis. The tremor can be voluntarily controlled for a short time, so that the patient has been able all his life to pursue his trade of watch-making, and he acquired justly the reputation of being the best workman in his section of the country. I have myself seen him pick up a piece of the delicate machinery of a watch in his forceps, carry it to the place where it should be fitted, the hand trembling like an aspen until just before it reached its destination, when it suddenly became firm and steady and deposited its burden just in the right place. The tremor does not increase, nor does it cease when a voluntary movement is made as shown above; it is only by a distinct and special effort of the will that momentary control is obtained. It is slightly apparent in the handwriting, though this is now as steady as that of most men who are seventy-seven years old. He controls the tremor better and writes more smoothly with a lead-pencil.

When excited the tremor affects his head, which oscillates, and also his muscles of articulation, so that speech is indistinct, while all the extremity muscles are affected in a greatly exaggerated way, thus increasing greatly his apparent mental excitement. The tremor ceases during sleep.

Close examination shows his muscular system to be normally developed and strong. The patella tendon reflex is normal, not absolutely exaggerated at least, though considering his age it may be relatively so. His gait and posture are natural, nor does he in any way show evidence of natural malformation, or progressive nervous disease. He can even now do work upon a watch.

This patient presents in its most marked form the tremor which runs through the family. The history of this is most interesting.

I. The grandfather was greatly addicted to alcohol and tobacco. He had no tremor.

II. The father was a man of very nervous temperament, quick in movement, violent in temper. He used no alcohol or tobacco. Had no tremor, but became insane early in life and died at the age of fifty-five.

His wife was a strong, healthy woman, without tremor.

III. The patient, whose history has been given, was one of nine children, six sons and three daughters, all of whom had the tremor and a slight flexion of the fingers.

Of the nine, (1) the oldest child, a daughter, had nine children, four sons and five daughters, one son became insane. All the children had the tremor more or less, especially when excited.

(2) The second child, a boy, became insane at twenty-one, but lived till eighty. He had the tremor.

(3) The third child, a daughter, married a man who became insane. She had a son and two daughters, the son became insane probably. The daughters were healthy. All had the tremor.

(4) The fourth child, a son, had five children, who all had the tremor.

(5) The fifth child was the patient whose history is given. He was married twice, and had two children by the first, and one by the second wife. These children were unusually intelligent, and even talented. All had the tremor in a slight degree.

(6) The sixth child was a son still living and reported "very peculiar." He married a woman who became insane, and had five children. One was an inebriate. All had the tremor.

(7) The seventh son was intemperate, was twice married, and had nine children, all having the tremor. One of the children, a daughter, had epilepsy. She herself has had four children, one of these had decided tremor. The three oldest had epilepsy, two dying in eclamptic attacks.

(8) The eighth child, a daughter, is still living, she has never married. She was always peculiar, and has the tremor markedly.

(9) The ninth child, a son, died childless. He had no tremor.

SUMMARY OF HISTORY OF FAMILY A.—*Grandfather* very intemperate, but never insane.

Father insane, but not intemperate. He had nine children. They all had the tremor.

One son insane from early life.

One, a lover of strong drink, but not a confirmed inebriate.

Two were very peculiar, and would be called now-a-days "cranky."

Two died without marrying.

All grew to adult life and most of them lived to advanced old age. Several showed intelligence and mental activity much above the average.

These nine, or rather seven of them, produced thirty-four children; and all of these that lived to grow up showed the family tremor, through in varying degrees. In two branches insanity appeared, in one a member was intemperate, and in one branch epilepsy developed in the daughter and grandchildren. The tremor also appeared in one of these latter. I cannot learn whether it has developed in other branches among the grandchildren, but, if so, it is much less marked, and the opinion in the family is that the tremor is dying out. The total number of cases in the family is forty-five.

In none of these cases did the tremor increase upon them as they grew older. It is a curious coincidence that the family early embraced spiritualism, and that that has passed through the different generations along with the tremor.

GENEALOGICAL TABLE SHOWING THE DEVELOPMENT OF THE HEREDITARY TREMOR IN FAMILY A.

GENERATION I.	II.	III.	IV.	V.
Grandfather, intemperate, and a tobacco user. No tremor.	Aunt, insane. Father, temperate, insane; no tremor. Aunt.	1st child, daughter, *tremor*. Married.	1st, son, insane, *tremor*.	
			2d, " *tremor*.	
			3d, " "	
			4th, " "	
			5th, daughter, *tremor*.	
			6th, " "	
			7th, " "	
			8th, " "	
			9th, " "	
		2d child, son, insane at 20; died at 80; *tremor*. Single.		
		3d child, daughter, *tremor*, Married.	1st, son, insane? *tremor*.	
			2d, daughter, "	
			3d, " "	
		4th child, son, *tremor*, Married.	1st, son, *tremor*. See hist.	
			2d, " "	
			3d, daughter, *tremor*.	
			4th, " "	
			5th, " "	
		5th child, son (see history), *tremor*. Married.	1st, son, *tremor*.	
			2d, " "	
			3d, " "	
		6th child, son; very peculiar; *tremor* Married.	1st, son, intemp. *tremor*.	
			2d, " *tremor*.	
			3d, " "	
			4th, " "	
			5th, " "	
		7th child, son; intemperate. Married.	1st, son, *tremor*.	
			2d, " "	
			3d, " "	
			4th, daughter, *tremor* and epilepsy.	1, epilepsy, *tremor*. 2, " 3, " 4, 1 year old.
			5th, daughter, "	
			6th, " "	
			7th, " "	
			8th, " "	
			9th, " "	
		8th child, daughter, "peculiar," *tremor*. Single.		
		9th child, son, *tremor*. Single.		

CASE II.—Through the kindness of Dr. Couland, of Brattleboro, Vt., I am able to give an account of the tremor occurring in its second generation.

The person examined is also a watchmaker and jeweller, and an excellent one. He is about forty years of age and married. His health has been good, his habits temperate, and he has never had any other nervous disorder than the one to be described. He is a man of nervous temperament, but quiet in manner and habits.

His tremor began in early childhood, and no cause other than heredity is assigned. It is bilateral and affects his arms chiefly. Occasionally there is tremor of the orbicularis on the right side (perhaps from wearing his jeweller's glass ?). He has also nystagmus, but never tremor of tongue, or lips, or neck muscles. The tremor has not, he says, progressed, and he says that it does not interfere with his work, though Dr. Couland seems to think that occasionally it does. It probably is annoying because it requires an extra effort to steady the hand. The patella tendon-reflex is decidedly exaggerated.

He does not suffer from rigidity, cramps, or neuralgia. I have long personally known the patient in previous years, and have seen him at his work. His tremor is fine, like that of the preceding generation.

We may possibly have a developing organic trouble in this case, but the family history is against it.

I have fortunately been able to secure evidence sufficient to show that hereditary tremor is not a freak confined to the family just described.

I have the records of a second family in which there were three cases, and of a third family in which there were two. Two of the cases in the second family I have seen, and, indeed, have personally known for a long time.

Family B.—In this family the tremor is found in only three persons, an uncle and two nephews, on the maternal side. The parents are both healthy, and have been temperate and regular in their habits.

The children consisted of three sons and a daughter. One son was a person of irregular habits, and died in early manhood. He had no tremor. The other two have had the tremor from childhood, but no other nervous disturbance. The one who suffered from the tremor most had, however, indulged a good deal in tobacco and alcohol. The details of his case were as follows:

Case I.—He is a man of about thirty-five years of age, of strong physique, a carpenter by trade. He is of nervous temperament, quick, and intelligent. Has had no fits or nervous disorder other than the tremor. This began in infancy, and has been somewhat worse than it is at present. This, doubtless, was when he had been dissipating. It does not interfere with his work as a carpenter, but at times it is not perfectly under control, and has interfered with his writing and eating. It affects his arms mainly, is very fine in character, and constantly present. He has no nystagmus or speech disturbance. His deep reflexes are a little exaggerated. It is a tremor that does not increase or cease on voluntary motion, and is under brief control of the will.

Case II.—The brother is a man of over forty years of age, of large, powerful build, and robust health. He is a business man of unusual ability, and a man of amiable disposition and excellent moral character, and temperate habits. He has always had good health and suffered from no intercurrent nervous disorder. His tremor began in early childhood, without known cause. It is much slighter in amount than in the brother, and he hardly notices it except that in writing sometimes he has to steady his hand by voluntary effort; yet he can, as a rule, write a perfectly smooth hand. Whatever makes him nervous increases the tremor. It has now lasted over thirty years without any increase. He has several healthy children, who have no tremors. There is no nystagmus, and the knee-jerk is normal. The tremor resembles his brother's in fineness, and in its affecting the upper extremities chiefly. It ceases during sleep.

FAMILY C.—Of this family I have been able to get very few details, and there is some doubt as to the hereditary character of the tremor.

CASE I.—James M., aged fifty-five. He came to my clinic at the Post-graduate School suffering from a tremor which presented the general characters of that of paralysis agitans. He said that he had always had the tremor since he was a boy, it had always been more severe on the right side. The head and eyes were not affected.

The patient stated that his uncle had been affected in the same way, but still more severely. In the uncle's case the head was affected.

THE GENERAL FEATURES OF HEREDITARY TREMOR.

The tremor in all the foregoing cases bears a general clinical resemblance. It begins in infancy or childhood, sometimes being brought out by an infectious fever. It continues without progressing in severity during a lifetime, which it does not shorten. The family history will reveal neuroses or psychoses. The upper extremities are most noticeably affected, but it may involve the head, neck, eye, laryngeal, or, in fine, any of the voluntary muscles. It ceases during sleep, and can be inhibited temporarily by the will. Everything that produces excitement or nervousness increases the tremor. It may be barely noticeable, except under some excitement, or the influence of alcohol or tobacco. It does not interfere with delicate coördination. It neither stops nor increases on ordinary voluntary movements; in this respect differing from the tremors of paralysis agitans, or multiple sclerosis. There may be with it slight contractures of the fingers, also developed early and non-progressive, but there are none of the forced movements, rigidity, paresis, subjective sensations, or vasomotor disturbances of paralysis agitans, while the head and neck are not so much affected, as in senile tremor. The tendon-reflexes may or may not be exaggerated.

The tremor is most nearly like that occurring in neurasthenic states, or from poisons, only there is no general nerve exhaustion, and no muscular weakness.

It is associated with other neuroses or psychoses, such as insanity, inebriety, and epilepsy, and also with examples of unusual talent or intellectual vigor. And it illustrates the fact that a neuropathic taint in a family may develop as a disease, or as some brilliant mental endowment. The tremor has a tendency in successive generations to die out. It may be directly hereditary or only of a family type, occurring in uncle and nephew. It may occur in one generation only as a congenital neurasthenic tremor. It is entirely distinct from paralysis agitans, in the fact of its heredity, non-progressiveness, and absence of any other neuromotor or vasomotor symptoms. It differs symptomatologically also from senile tremor, which latter generally affects first and entirely the head and neck.

I have not thought it worth while to discuss its pathology. It is undoubtedly neuropathic, not myopathic, and in the following classification of tremors I should place it among the neurasthenic:

CLASSIFICATION OF CHRONIC TREMOR.

Organic	A. Due to inflammatory sclerotic,	post-hemiplegic tremor. tremor in spasmodic tabes. tremor in multiple sclerosis.	
	neoplastic, or	tremor from tumors in brain or cord.	
	degenerative changes affecting the motor tract from cortex to anterior cornu,	paralysis agitans. senile tremor.	
	B. Due to same changes affecting motor nerves or muscles,	neuritic tremor. fibrillary myotrophic tremor.	
Functional	Toxic tremors,	lead, alcohol, tea, tobacco, mercury, etc.	
	Neurasthenic tremor,	acquired	*e. g.*, phthisical, syphilitic, professional.
		hereditary and congenital.	

THE DYSPNŒA OF ASTHMA AND BRONCHITIS:

ITS CAUSATION, AND THE INFLUENCE OF NITRITES UPON IT.[1]

BY THOMAS R. FRASER, M.D., F.R.S., F.R.C.P.E.,
PROFESSOR OF MATERIA MEDICA AND OF CLINICAL MEDICINE IN THE UNIVERSITY OF EDINBURGH.

DYSPNŒA, or difficulty in breathing, is one of the most common of symptoms in disease, and especially in disease of the respiratory apparatus, with each of the many pathological affections of which it may be associated. My remarks, however, shall be restricted to its manifestation in asthma and bronchitis. In the former disease it presents itself as an urgent orthopnœic breathlessness, and in the latter as a sensation of constriction or weight in the chest, and a difficulty in the performance of respiration. The breathlessness, or dyspnœa, in each of these diseases is, no doubt, dependent on defective aëration of the blood, caused either by insufficient contact of air with the bloodvessels in the pulmonary vesicles, or by insufficient movement of air in the air-passages. Insufficient contact occurs, for example, when the air vesicles are filled with liquid or semiliquid contents; and it is clearly a cause that is to some extent productive of the dyspnœa of bronchitis in many of its forms and stages, as well as of the dyspnœa of several other diseases of the

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[1] Read at a meeting of the Medico-Chirurgical Society of Edinburgh, on the 6th of April, 1887.